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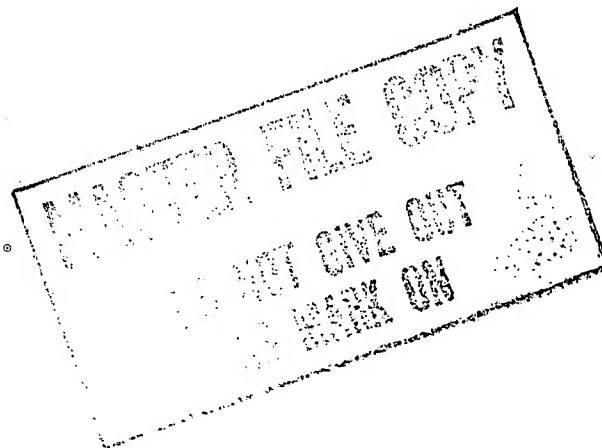
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Brazil: Exporting Arms to the Third World

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An Intelligence Assessment



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ALA 84-10071
July 1984

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Brazil: Exporting Arms to the Third World

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An Intelligence Assessment

This paper was prepared by [redacted]
[redacted] Office of African and Latin American
Analysis. It was coordinated with the Directorate
of Operations. [redacted]

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Comments and queries are welcome and may be
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[redacted]

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July 1984*

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**Brazil:
Exporting Arms to
the Third World**

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Key Judgments

*Information available
as of 17 July 1984
was used in this report.*

Brazil's emergence as the world's eighth-largest arms exporter has made the weapons industry an important factor in the nation's economic and international standing. Although arms constitute less than 5 percent of Brazil's exports, they have taken on added significance in Brasilia's efforts to maintain a trade surplus and thereby meet its massive international debt repayment obligations. Brazil uses arms exports to expand and solidify its relations with Third World states and believes that the prestige of manufacturing and exporting arms on a global scale contributes to the country's drive toward *grandeza*, or great-power status.

Brasilia is aware of the domestic and international implications of weapons exports, which from time to time have become a subject of controversy within the government, and tries to limit criticism by keeping details of arms deals out of public view. Despite disagreement in Brasilia over the suitability of customers such as Iran and South Africa and concern that sales to Central America could increase tensions there, we believe Brazil will continue aggressively to expand the volume and sophistication of its arms exports to Third World countries.

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In our judgment, Brazil will continue to rely heavily on its traditional Arab customers both for arms purchases and investment capital. The cooperative ventures financed by Iraq, Libya, and other Arab states in recent years have allowed Brazil to push forward with new weapon systems, in part by giving the Arab purchasers a strong voice in determining the specifications of the weapons to be developed. This concentration of sales to the Middle East—Iraq and Libya now absorb well over half of Brazil's arms exports—makes Brazil extremely vulnerable to any sudden cut in the region's demand.

In view of intelligence assessments that project a shrinking world demand for arms during the next several years, we believe Brazil will try to protect export levels by aggressively penetrating new markets and expanding its share of international arms sales. In our judgment, it will introduce new product lines—the Osorio tank and the jointly produced AMX fighter, for example, both of which it hopes to sell in the Middle East—and push sales of its less expensive light armored vehicles and trainer aircraft to African and Latin American countries, most notably oil producers like Nigeria and Venezuela.

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In our view, Brazil's emergence as a weapons exporter has both positive and negative implications for the United States. On the plus side, there are tangible benefits to Brazil from a growing domestic industry, a source of foreign exchange to assist in the payment of its debt, and the contribution to Brazil's sense of independence. Moreover, the United States stands to gain from security-related arms sales to friendly countries that Washington would like to support but may be unable to arm for diplomatic reasons, and from the possibility that Brazil could displace suppliers of some types of Soviet equipment in sensitive Third World markets such as Iraq, Algeria, or Peru.

Brazil's customers include countries hostile to the United States, such as Libya, however, and potentially Iran. Libyan support for insurgent groups such as the Polisario Front and Chadian dissidents has included the supply of some Brazilian weapons and training in the use of Brazilian armored vehicles. Moreover, Brazil's dependence on Middle East markets for its arms exports is an incentive for it to take stands in the United Nations and other international forums that differ markedly from those of the United States—such as supporting anti-Israeli motions.

Brazil's arms exports to Third World customers also raise questions about the transfer of weapons technology. Recent US-Brazilian agreements on military-industrial cooperation offer some opportunity to influence the nature and direction of Brazil's arms sales and may encourage Brasilia to formulate better controls over technology transfer. The Brazilians probably will continue to resist controls on indigenous or derived technology, but we judge they will accept some reexport restrictions in order to obtain information on certain US systems such as the TOW antitank missile or advanced US fire-control or imaging systems. Given the difficulty of monitoring arms transfers, however, we believe there is a significant long-term risk of leakage of US-derived technology to hostile states, either to Third World countries in the form of hardware incorporating derived or imitative Western technology, or to the Soviet Union in the form of Western defense-related industrial processes. In particular, we believe that Brazil's improving weapons technology has already piqued Moscow's interest, while at the same time Brasilia's low level of awareness of the Soviet technical intelligence collection effort has impeded its ability to develop restrictive guidelines on technology exchange with the USSR.

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Brazil: Exporting Arms to the Third World

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Introduction

Brazil has emerged as a major international arms supplier. The promotion of an arms industry slightly over a decade ago as a way to reduce import dependence, obtain economies of scale, and acquire international prestige has made Brazil the eighth-largest weapons exporter in the world and a key supplier to Third World countries. Moreover, military sales have taken on added importance as Brazil tries to generate export earnings to service its massive foreign debt. Brazil's aggressive pursuit of markets and growing technological sophistication raise serious questions about the transfer of technology—some of it potentially US—to hostile countries.

The Brazilian Arms Industry

Prior to the mid-1960s, Brazil's weapons production was limited to small arms and ammunition, while heavier items were acquired from the United States. When Washington cut back its military assistance program following the military coup of 1964, Brasilia turned to European suppliers.

the armed forces were dissatisfied with European-made equipment because of its expense and the difficulty of obtaining spare parts and became increasingly convinced that a domestic arms industry was essential to national security. As a result, in the late 1960s Brazil began a drive for self-sufficiency in weapons production. The severing of military ties with Washington in 1977, in response to US criticism of human rights practices, provided additional impetus to development of the arms industry. Moreover, building a domestic arms production capability furthered Brazil's quest for *grandeza*, or great-power status. (see figure 4 at end of book).

The arms industry developed as a joint public and private venture. A private firm began making military trucks for the armed forces in 1965 and another produced the first armored vehicle prototypes three years later. A presidential decree in 1969 put Brazil in the business of aircraft development and manufacturing by establishing the public-private firm Embraer, and series production of the first locally designed

Brazil's Arms Industries

Engesa (Engenheiros Especializados, S.A.)

Engesa, headquartered at Sao Jose dos Campos, Sao Paulo, is one of the giants among Brazil's weapons producers. It specializes in the design, marketing, and production of wheeled armored vehicles and military trucks. Its influential and outspoken president, Jose Whitaker Ribeiro, is a former engineer.

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Embraer (Empresa Brasileira de Aeronautica, S.A.)

A public-private company engaged in general aviation, Embraer is increasingly involved in the production of military aircraft such as the Tucano trainer and the AM-X subsonic jet. It is headed by Air Force Col. (Ret.) Ozires Silva and is headquartered at Sao Jose dos Campos.

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Avibras Industria Aeroespacial, S.A.

Brazil's principal rocket firm, Avibras is active in developing both the SONDA sounding rockets used in Brazil's space launch vehicle program and a variety of military rockets, including the versatile Astros multiple rocket launching system. The firm's headquarters is located at Sao Jose dos Campos, near the Air Force's principal research and development center.

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Electrometal Acos Finos, S.A.

As the largest and most advanced specialty steel-maker in South America, Electrometal is a key supplier to Brazil's military and aerospace industries.

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Bernardini Industria e Comercio, S.A.

This small private firm specializes in the redesign and reconditioning of older US tanks and armored personnel carriers. Bernardini has sold some tanks to the Brazilian Army, but exports have been disappointing.

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model began in 1974. Imbel, a government agency, was founded in 1975 to direct operations at six state-owned military factories.

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Major Weapon Systems**Armored Vehicles**

Osorio Medium Tank. *Still under development, Engesa's first tracked armored vehicle will reportedly incorporate laminate armor and have an optional 120-mm smoothbore gun capable of firing kinetic, conventional, and high explosive antitank (HEAT) ammunition.* [redacted]

Tamoyo Medium Tank. *Bernardini's latest and most advanced tank, the Tamoyo, will have an optional 105-mm smoothbore cannon and will reportedly be able to fire a full range of modern antitank rounds.* [redacted]

EE-9 Cascavel. *A six-wheeled, light armored reconnaissance vehicle with a 90-mm gun as its main armament, the Cascavel is popular for its reliability and low cost (see photo).* [redacted]

EE-11 Urutu. *A six-wheeled, amphibious armored personnel carrier that mounts a 50-caliber machine-gun and is equipped with twin propellers and rudders.* [redacted]

EE-3 Jararaca. *A light, four-wheeled reconnaissance vehicle with a 50-caliber machinegun, the Jararaca includes options for mounting a 20-mm cannon, recoilless rifle, or antitank missile launcher.* [redacted]

Rockets

108R Multiple Rocket Launcher. *A small, towed, tactical rocket launcher used by the Brazilian Army.* [redacted]

X-20 and X-40 Rockets. *Twenty-km- and 40-km-range tactical artillery rockets developed by Avibras.* [redacted]

Astros Multiple Rocket Launching System. *A large, advanced, truck-mounted multiple rocket launching system, the Astros fires three types of surface-to-surface rockets and is produced for export to Iraq (see photo).* [redacted]

Aircraft

Aermacchi 326 6B (Xavante). *A short-range, subsonic ground attack fighter, the Xavante was designed in Italy and assembled in Brazil (see photo).* [redacted]

Bandeirante (Patrol Version). *A maritime patrol version of the commercially successful Bandeirante civil transport (see photo).* [redacted]

Tucano Trainer. *A commercially successful trainer/light ground attack aircraft designed and built in Brazil, the Tucano entered series production last year and has already been sold to Egypt, Iraq, and Honduras.* [redacted]

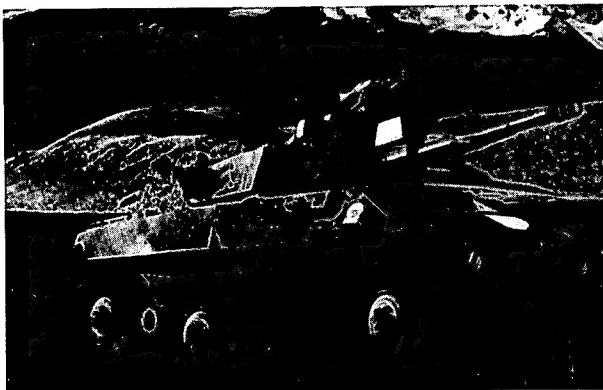
Brasilia (Military Version). *Designed as a larger and more capable follow-on to the Bandeirante, the Brasilia also is intended to have military variants. Design studies are in progress to determine which of the possible military transport, maritime patrol, or early warning versions is likely to be commercially successful (see photo).* [redacted]

AM-X Centauro. *An Italian-designed subsonic fighter, the jointly produced AM-X is intended to be the backbone of the Brazilian Air Force in the early 1990s. The recent crash of the first prototype in Italy during testing has been a setback for the program, but plans continue for beginning series production in 1987 (see photo).* [redacted]

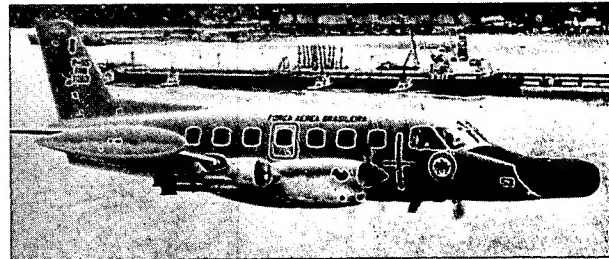
Spurred by such government encouragement, the arms industry has grown at a phenomenal pace. In exports alone, output rose from negligible levels in 1974 to some \$800 million in weapons deliveries eight years later, and employment in defense-related firms rose from a few thousand to over 100,000 in the same period. In little more than a decade, according to our analysis, Brazil emerged as the largest manufacturer of armored cars outside the Warsaw Pact. A variety

of reporting from defense attache sources and technical journals indicates that Embraer, which established itself as the largest general aircraft manufacturer in the Western world outside the United States, has been devoting an increasingly larger share of its resources to military models. Of the firm's newest designs, one is a subsonic jet fighter and another a combination trainer/light attack aircraft. [redacted]

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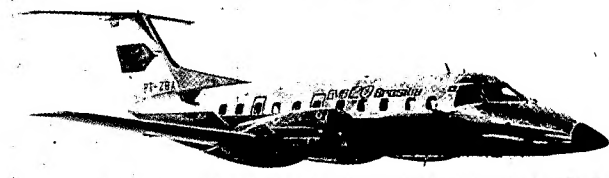


Cascavel



Bandeirante (patrol version)

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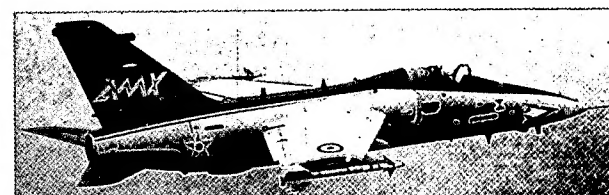
Brasilia transport

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Astros launcher firing 40-km rocket



AM-X Centauro fighter

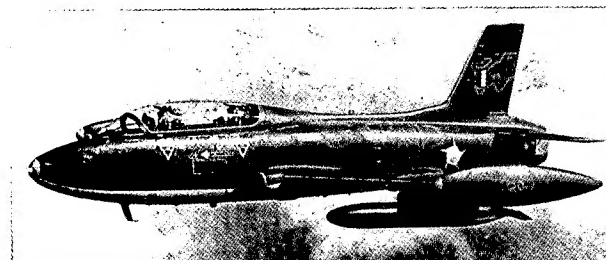
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Emphasis on Exports

The rapid expansion of Brazil's weapons production capability has resulted in part from its growing exports to the Third World. The Arab states are particularly valuable customers, with Iraq and Libya accounting for more than one-half of all Brazilian export sales. A variety of attache and open sources report that less developed countries find Brazilian arms attractive because of their simplicity, durability, and low prices. Moreover, Brasilia has proved to be a reliable supplier and does not insist on control over reexport.

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Xavante fighter

The government uses subsidies to stimulate exports, which now account for some 90 percent of total output. Brazil's 280,000-man armed forces are too small a market to provide a sound economic base for

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an industry requiring large capital investments, a sizable skilled labor force, and relatively long lead-times for product development. Thus, according to a variety of attache and embassy reporting, Brasilia decided early in its planning to reduce unit costs by aggressively marketing arms overseas and by making export potential the overriding criterion in evaluating proposals for new arms production. [redacted]

The government also has used arms exports to help deal with external financial problems. Following the oil crisis of 1973, the government began to rely on arms sales to the Middle East—often as counter-trade—to cover some of the expense of petroleum imports, according to attache reports. We see Brazil's current financial troubles as an added incentive for emphasizing weapons exports, both to earn badly needed foreign exchange and to keep defense industries operating during a time of domestic retrenchment. Although annual figures vary sharply because of fluctuating demand and the lag between agreements and deliveries, the general trend of confirmed sales clearly has been upward.¹ From 1978 through 1982, for example, the value of annual arms exports in real terms quadrupled. [redacted]

Brazil's Arms Export Policies

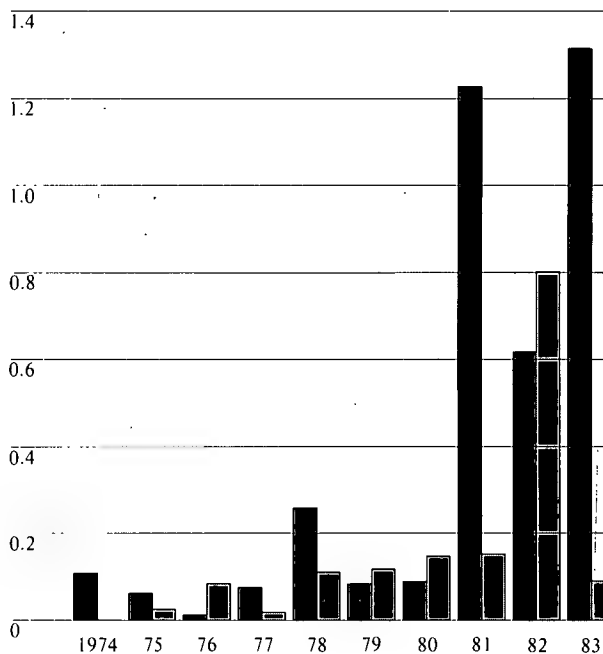
Arms export policies affect a wide variety of interests—foreign relations, employment, and balance of trade in particular—and decisions on how to implement them, in our view, grow out of interplay between various sectors inside and outside the government. Key players are:

- The Foreign Ministry, which supports arms exports for economic reasons and national prestige, but does not want to endanger diplomatic and economic relationships abroad by selling weapons indiscriminately.
- The economic ministries, which usually focus on the commercial aspects of arms sales with little regard for the diplomatic implications.

¹ Statistics on these arms exports are difficult to obtain, because Brazil, like many other suppliers, often shrouds its transactions in secrecy. Moreover, the information it releases usually fails to distinguish between contracts and deliveries, and may even overstate total sales. [redacted]

Figure 2
Brazil: Arms Exports, 1974-83

Billion US \$



^a Incomplete data.

■ Agreements
□ Deliveries

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- The armed forces, which see weapons exports as a boon to Brazil's power and to the military's prestige, but which rule out sales to certain Communist countries.
- The arms industries, which use their excellent contacts in the government to promote sales.
- The presidential palace, which acts as a referee to resolve disputes arising from these sometimes conflicting interests. [redacted]

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The Foreign Policy Community

Brazil's arms export policies are formulated through the interaction of various actors in and out of government. Their differing priorities sometimes lead to conflict over the suitability of weapons clients. []

The Foreign Ministry

Itamaraty—as the Foreign Ministry is called, after the palace that originally housed it in Rio de Janeiro—lost influence after the coup of 1964, but today it is again the preeminent force in foreign policy. []

Itamaraty is a highly competent, professional organization staffed by an elite corps of well-trained and disciplined diplomats. It has been in the forefront of Brazil's steady evolution away from a close identification with the United States and toward diversified political and economic ties. Most Foreign Ministry officials advocate a pragmatic diplomacy that emphasizes economic and commercial relations and downplays ideology. []

[] most of Foreign Minister Ramiro Guerreiro's top advisers favor a so-called Third World orientation that seeks expanded links to developing countries as the best way to advance national interests. Itamaraty, we believe, backs arms exports that further overall diplomatic goals and opposes weapons sales that might jeopardize existing relationships. []

The Economic Ministries

The Planning and Finance Ministries are key players in the making of international economic policy, []

[] their goals often clash with those of Itamaraty. They are most concerned with commercial and financial matters and are apt to be less sensitive than the Foreign Ministry to the diplomatic nuances of arms sales. Because Planning Minister Antonio Delfim Netto has long been a member of President Joao Figueiredo's inner circle, the economic ministries can be a formidable force in decisionmaking. []

The Armed Forces

The military's direct role in foreign policy has diminished steadily over the past decade. Although the

armed forces probably retain a veto power over certain issues, such as relations with Cuba, the high command generally supports Itamaraty's overall approach to advancing Brazil's interests. The military clearly has a stake in decisions regarding arms exports, which affect the domestic arms industry as well as relations with the military establishments of other countries, and is likely to weigh in strongly when such issues are being debated. []

The Arms Industries

Both public and private corporations involved in weapons production lobby to advance their own interests. We believe the arms industries, many of which are headed by retired military officers, have excellent contacts in the government and, for the most part, receive full cooperation in promoting overseas sales. Jose Whitaker Ribeiro, president of the engineering firm Engesa, is particularly influential by virtue of his reputation as the driving force behind the country's arms industries and his standing as head of Imbel, the government entity that coordinates weapons production. Engesa and other weapons producers enjoy the collaboration of Brazil's embassies and military attache network in demonstrating equipment and negotiating deals with foreign buyers. []

The Presidential Palace

Ultimately, disagreements are resolved at the presidential level. The National Security Council, comprising all Cabinet ministers, ostensibly must approve all arms transfers but actually meets infrequently and deals primarily with domestic issues. Day-to-day decisions are made by the so-called Nine O'Clock Group, composed of the President's five or six top military and civilian advisers. [] the group currently includes the heads of the National Intelligence Service, the National Security Council, and the Planning Ministry, as well as the chiefs of the President's Military and Civil Households. []

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Converging Goals

In most cases, the goals of the different bureaucratic actors are compatible, and Brasilia is able to use weapons sales simultaneously as a means of earning money and strengthening ties with other countries. We see Africa as a region where this has occurred. Bonds developed since the 1960s have yielded economic benefits—petroleum supplies from Nigeria and other countries as well as new markets for weapons and other manufactures—while furthering Brasilia's diplomatic objective of demonstrating interest in the Third World. [redacted]

Brazil initially excluded Portugal's former African colonies from weapons sales following their independence in the mid-1970s. [redacted]

[redacted] By 1980, however, the Brazilians reconsidered arms deals as they undertook a campaign to forge strong relations with the new nations. The change in policy also was aimed at tapping new markets for Brazilian manufacturers and, in the case of Angola, a new source of petroleum. [redacted]

[redacted] materiel has been shipped to Mozambique, according to the Brazilian press. Moreover, during the past year, Brazil has signed agreements to furnish relatively small quantities of military equipment to Guinea and Nigeria and has shipped 90 armored vehicles to Zimbabwe, according to press reports [redacted]

Suriname, on Brazil's northern border, offers another example of converging policy goals. Both the Foreign Ministry and the Brazilian armed forces perceived important strategic interests at stake in Cuba's links to the regime of Surinamese strongman Desire Bouterse, [redacted] In

April of last year, Brasilia made clear to Bouterse it would not accept a large Cuban presence in Suriname and, as a substitute for Havana's support, offered Paramaribo military training and equipment as well as technical cooperation and increased trade. [redacted]

[redacted] the Brazilians subsequently agreed to extend a \$15 million line of credit for a variety of military items. They also have conducted docking surveys to facilitate a delivery of armored vehicles scheduled to arrive in August, according to defense attache sources. [redacted]

Arms sales to the Middle East—including Libya but with the exception of Iran—also are the result of policy convergence, as the economic need to assure foreign markets and oil supplies complements the Third World political orientation favored by the Foreign Ministry. Despite growing disapproval throughout the West of the Libyan regime, Brazilian policymakers do not discriminate against it as an arms customer. Libya is willing to provide oil in exchange for arms, and Brasilia apparently sees it as a viable market [redacted]

Conflicts Over Sales

Notwithstanding the general agreement among the various bureaucratic players, some potential arms deals have sparked debate within the foreign policy community, inhibited the formulation of coherent policies, and caused confusion and contradictory behavior from Brazil. [redacted]

Iran. The question of direct, or even indirect, arms sales to Iran has been a particularly contentious issue. [redacted]

[redacted] some officials in the military and the economic ministries are eager to tap the potentially lucrative Iranian market. [redacted]

[redacted] the Foreign Ministry fears that such exports would endanger Brazil's carefully cultivated relations with Iraq and Saudi Arabia, which are important both as major oil suppliers and as markets for Brazilian goods [redacted]

[redacted] Press reports indicate that Foreign Minister Ramiro Guerreiro's trip to Iraq last September was intended to assuage Baghdad's fears following public speculation about weapons sales to Iran. [redacted]

Brasilia finally decided to shelve the deal rather than jeopardize ties with Iraq. [redacted]

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The differences of opinion over arms sales to Iran recently have included transfers via third parties.

[redacted] Brasilia last November was considering a Syrian order for more than 50 combat helicopters and an unspecified number of armored vehicles, many of them intended for Iran. In March, moreover, an Army spokesman publicly admitted that Libya had provided Brazilian war materiel to Tehran, and he reiterated Brazil's policy of attaching no end-user requirements to its arms contracts. The Foreign Ministry, however, is contesting this arrangement [redacted]

Nonetheless, the issue is far from settled. Brasilia continues to give signs of strong interest in the Iranian market that include:

- A Brazilian commercial delegation visit to Iran in mid-1983 to boost nonarms exports.
- The naming, last May, of a new ambassador to Tehran, following several years during which the mission was headed by a charge d'affaires.
- The public assertion in June by Brazilian officials—obviously attempting to reassure Iran—that recent press reports of arms deals with Iraq referred to agreements signed two years ago.
- Private discussions in late June between a planning ministry official and the Iranian Ambassador demonstrating continued Brazilian interest in selling arms to Tehran—but only if sales could be arranged through third countries. [redacted]

South Africa. In our view, Brazil's publicly declared refusal to sell arms to South Africa is intended to protect commercial and diplomatic bonds with black African nations. [redacted]

[redacted] the Brazilian military favored the sale of weapons to Pretoria but that the Foreign Ministry vigorously opposed it. A compromise appears to have been struck: [redacted]

Brasilia planned to fill a South African order for

small arms and ammunition but not one for the Tucano aircraft, the sale of which would be more difficult to conceal. [redacted]

Other Cases. The military apparently has a veto over weapons sales to certain countries, in part in keeping with its longtime anti-Communist tradition. According to US defense attache reporting, of the three nations—South Africa, Cuba, and North Korea—cited by Brasilia last year as off limits to Brazilian arms exporters, both Cuba and North Korea were blacklisted because of pressure from the armed forces. [redacted]

Sales to Central America also are limited, but for different reasons. Brasilia has been wary of providing arms to the Central American countries because of its public support for the Contadora Group's peace initiative and, we believe, its desire to avoid being seen as contributing to tensions in the region. Nonetheless, the Brazilians treat potential Central American customers differently. [redacted]

[redacted] Brazil prohibited all arms exports to Nicaragua—a decision we believe stems from the Brazilian military's distaste for the Sandinistas' Marxist and pro-Cuban leanings. Although the prohibition applies to a wide variety of weapons and munitions, it does not extend to commercial explosives, which were being shipped to Nicaragua in large quantities in July. Brasilia also recently delivered four of an order of eight Tucano trainer/light ground attack aircraft to Honduras. The Foreign Ministry, defending itself against widespread criticism of the sale, argued that the planes were intended primarily for training. [redacted]

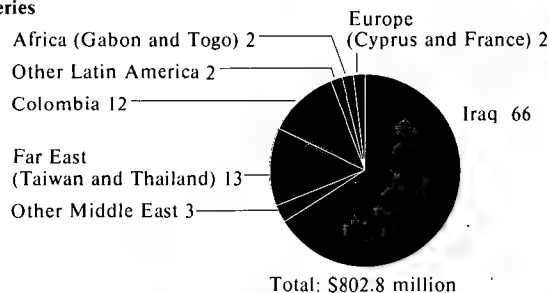
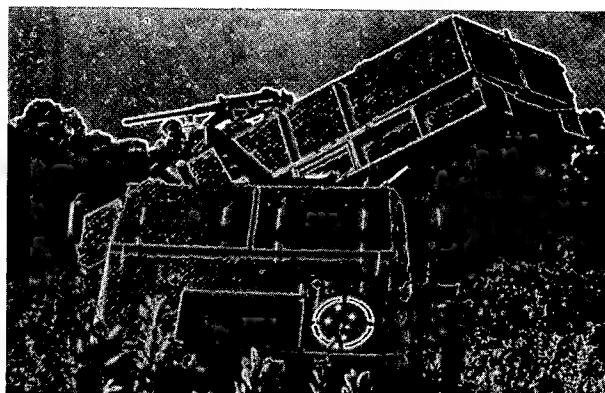
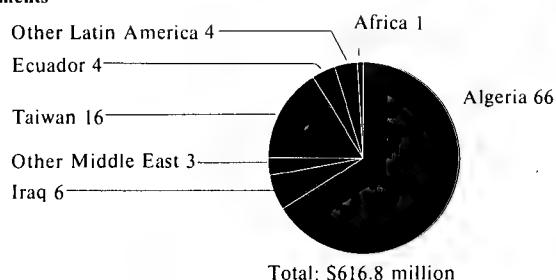
Save these exceptions, any country is free to purchase Brazilian arms, even if it intends to reexport them. Libya, for example, apparently has transferred some of its Brazilian-made weapons to insurgent associates: the Algerian-based Polisario Front has at least 50 Brazilian Cascavel armored vehicles, and we believe Tripoli was the source. [redacted]

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Figure 3
Brazil: Arms Deliveries and Agreements, 1982

Percent

Deliveries**Agreements**

Astros rocket launcher and fire-control unit

surface-to-surface rocket launching system—involves more than 82,000 rockets and 60 vehicles.

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Arab Involvement in Research, Development, and Purchases

Brazil's emphasis on Middle Eastern arms markets, in our view, has enabled Arab clients to influence the direction of the arms industry. The Arabs, as major purchasers, have an interest in developing certain weapons and determining their specifications. Brazil's practice of being responsive to such customer needs has brought new investment capital as well as additional arms contracts, but carries the risk of diverting production into weapons for which Brazil has little domestic need and leaving the industry vulnerable to dramatic shifts in external demand.

Iraq

Brazil's most important arms purchaser and Middle Eastern export market has backed several cooperative ventures. The largest project so far—a \$500 million deal for the manufacture of the Astros multiple

The Iraqis, searching for more powerful missiles, also have shown an interest in Brazil's space program. In June of last year, a senior officer of the Brazilian

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Jararaca reconnaissance vehicle

Aeronautical Technical Institute stated that in 1981-82 there had been a "Special Middle East Project" to produce a missile jointly with, or funded by, Iraq. The project was canceled after 10 months.

Libya

Tripoli—the second-largest purchaser of Brazilian arms—also has had a role in the design of specific weapon systems.

The Brazilian press subsequently announced that the weapons firm Engesa would equip its Jararaca line to fire antitank missiles and install a filtering system that would enable it to operate in nuclear-, biological-, and chemical-warfare-contaminated environments. We believe these modifications were undertaken specifically to accommodate the Libyan order, although we do not know whether Libya is the user or if the vehicles are for reexport to Iran or one of Tripoli's insurgent clients.

Libya also may be involved in the development of the ET-1 Osorio medium tank.

Recent press reports also say Libya offered to finance the development of a Brazilian main battle tank last year. According to US defense attache reporting, however, Engesa president Whitaker in January claimed to have signed a \$2 billion contract with Saudi Arabia to develop and produce the Osorio. Even if Tripoli is not the main

backer of the program, Whitaker is optimistic regarding potential sales to Libya and Iraq, according to defense attache sources.

Saudi Arabia

In addition to their reported interest in the Osorio tank,

the Brazilians were shipping the shorter range Astros to Saudi Arabia for demonstration. Although Riyadh has not been a significant buyer of Brazilian arms in the past, it has shown more interest since the visit of a Saudi Army mission to Brazil in February.

Kuwait

a \$160 million contract with Kuwait for 422 Urutu armored cars, which are to be mounted with one-man turrets equipped with integral TOW antitank missile launchers. As of early June, design work was continuing on the project, according to US defense attache sources, although the visit of a Kuwaiti inspection team was postponed due to deteriorating security conditions in the Persian Gulf.

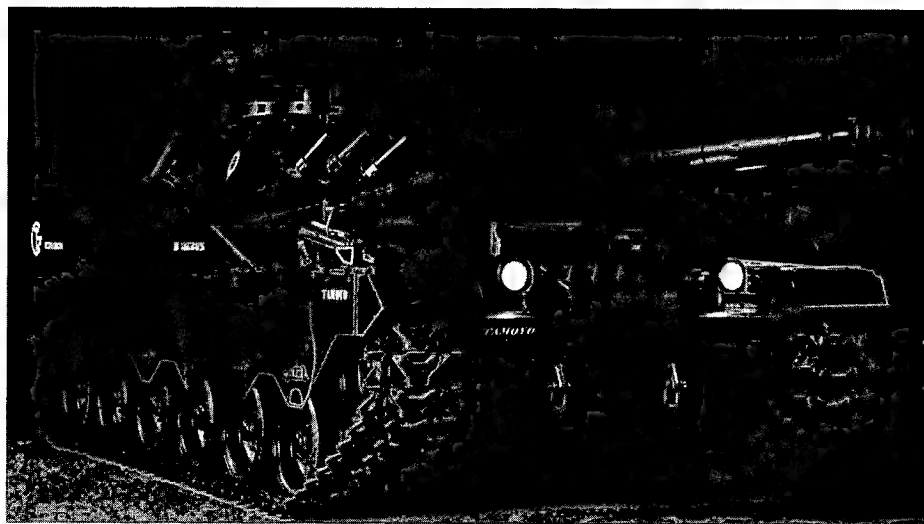
Egypt

Successful cooperative ventures with Arab arms clients are leading the Brazilians to export entire factories for weapons assembly and technical support. According to press and US defense attache reports, Brazil will sell 10 Tucano trainer/light ground attack aircraft to the Arab Organization for Industrialization, which then will assemble 110 more at its plant in Egypt. Eighty of these would be destined for Iraq, and the remaining 40 would be for the Egyptian Air Force. The \$100 million package, the first substantial transfer of weapons technology abroad by a Brazilian firm, includes training, flight simulators, and an option for the purchase of an additional 60 Tucanos. We believe that the potential gains of this venture have encouraged Brazil to begin discussions on the

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The Tamoyo medium tank (above), and the Osorio (still under development by Engesa) reportedly will have laminate armor and be capable of using a full range of modern antitank munitions.



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construction of a Brazilian armored vehicle plant in Egypt, and similar talks probably are taking place with other Arab countries.

Technology Transfer Issues

Three types of technology transfer issues arise from Brazil's expanding arms exports:

- Export to Third World countries of weapons or production processes incorporating existing Brazilian technology.
- Potential future exports to Third World countries of Brazilian military hardware incorporating advanced Western technology, which would increase the lethality of their arms inventories while not necessarily improving production capabilities.
- Potential future leakage to the Soviet Union of advanced Western defense-related technologies through Brazilian research scientists, which could occur before the Brazilian defense industry itself has assimilated the new technology.

At present, the level of Brazil's own weapons technology is not high enough for its export to constitute a serious threat, but attractive prices and unrestrained sales may increase the accessibility in the international market of some proven conventional systems.

As Brazilian industry acquires more advanced Western arms technology over the next decade, the second issue—increased lethality of weapons in Third World countries resulting from derived or imitative Brazilian technology—will grow in importance, in our view. A proposed agreement on military industrial cooperation between Brazil and the United States presumably would lead to further transfers. Indeed, the Brazilians are seeking advanced technology on such US weapon systems as the TOW antitank missile, the Black Hawk helicopter, the Maverick air-to-ground missile, and advanced imaging and targeting systems, according to Embassy and defense attache reporting.

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In the past, Brasilia has been reluctant to accept export controls over such technology. Since the 1960s, it has conditioned some of its own foreign arms acquisitions on suppliers' willingness to transfer the requisite technology, thereby enhancing the country's industrial base. Brazil traditionally has sold its weapons to almost all comers, both to increase sales and to project a foreign policy independent of either superpower. Already some Brazilian policymakers have shown signs of uneasiness with potential joint programs, fearing that cooperation with the United States might tie their hands in dealing with other countries. In January, for example, three high-ranking military officers publicly emphasized the necessity of selling arms to any country, reflecting concern that

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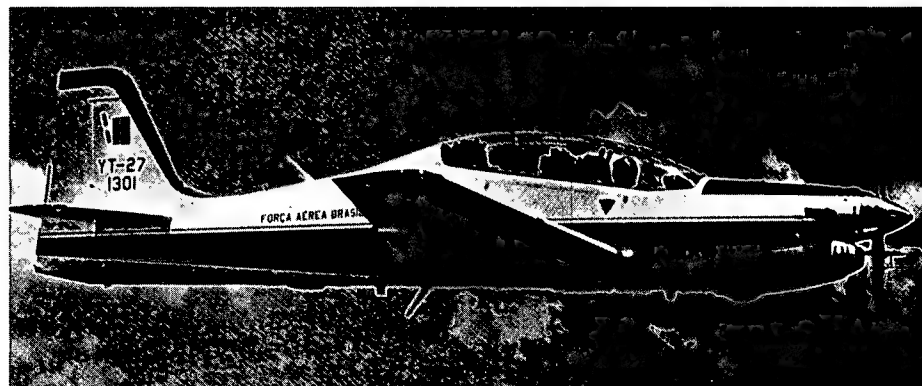
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Tucano trainer/light attack aircraft [redacted]



export controls could erode an advantage heretofore enjoyed by Brazil's arms industries. [redacted]

[redacted] Engesa officials earlier this year chose a West German-made engine for the Osorio tank to avoid reexport restrictions on a comparable US-manufactured engine. [redacted]

Soviet Interest

Brazil's improving access to Western defense and defense-related technologies has begun to attract Moscow's attention, and the Soviets already may have obtained useful information from Brazilian specialists. Last year, for example, a Brazilian firm gave advice to a Soviet delegation on resolving certain problems with specialty steel processes, according to defense attache reporting. Earlier this year, moreover, a visiting Soviet delegation broached the possibility of cooperation in the area of optical communications, according to the US Embassy. In early May, press reports stated that the Soviets had expressed interest in Brazilian research on plasma fusion and lasers, which have military applications in advanced armor plating and fire control. Brazil is already experimenting with laser rangefinders on some of its exported armored vehicles. [redacted]

Niobium metallurgy is another technical field with military applications that could be exploited by the Soviet Union. According to press reports, Brazil contains 85 percent of the world's reserves of niobium, which is used as a superconductor of electricity and as a component of sensors in military equipment. In April, a Brazilian firm's European subsidiary reportedly proposed expanding its technical cooperation

agreement in niobium metallurgy to include the Soviet State Committee for Science and Technology. This agency not only oversees policy but also is responsible for acquiring technological intelligence from Western countries. [redacted]

According to the US Embassy, Brazil has no firm policy on technology sharing with the Soviets. Furthermore, neither the National Security Council nor the National Intelligence Service yet fully appreciates the potential seriousness of this issue, in our estimation. In early April, the Foreign Ministry official responsible for scientific and technical cooperation agreements informed the US Embassy's Science Counselor that the government was still trying to formulate a policy to handle the growing Soviet interest in technical exchanges with Brazil. [redacted]

Prospects

We believe that Brazil will continue trying to expand the volume and sophistication of its arms production and exports, even though the effort will produce debate among many actors in the policymaking arena. The domestic arms industry already has yielded demonstrable economic and diplomatic benefits, and we believe the considerations of prestige and national security will continue to carry weight, particularly within the armed forces. Brazil's serious international financial problems put a premium on exports, no matter how small. Moreover, now that the military plans to surrender power to a civilian regime early next year, it probably will give greater attention to the

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arms industry as part of its new emphasis on "professionalization."² The new civilian administration, for its part, is likely to accord the military a substantial voice in arms policy as a means of giving it a role in national security that does not intrude too directly on domestic political concerns. [REDACTED]

In our view, Brazilian arms sales will continue to grow, albeit at a slower rate, in the shrinking international arms market that we foresee in the next few years.³ This growth will depend on continued Brazilian sales to its two primary customers, Iraq and Libya. We also expect Brazil to continue to expand its markets in moderate Arab countries, such as Egypt and Saudi Arabia, and in Latin America and Africa. Besides the sales to Africa mentioned previously, Brazil has targeted clients in Latin America—Venezuela and Colombia are considering a purchase of Brazilian armored vehicles, and Paraguay and Ecuador have received shipments of 50 and 30 armored vehicles, respectively, since the beginning of the year, according to US defense attache sources. Brazil's ability to offer a more advanced range of products later in the decade—subsonic attack aircraft, tactical missiles, and medium tanks—should improve its ability to penetrate these markets. Small arms, lightly armored vehicles, and noncombat aircraft will, however, continue to be Brazil's principal income earners. [REDACTED]

While seeking new customers, Brazil probably will continue to rely heavily on its traditional Arab clients, which appear willing and able both to place large orders for arms and to bankroll the design and manufacture of specific systems. Brasilia will be careful to protect its Middle Eastern markets and sources of investment capital. Nonetheless, we believe both the Iranian Government and some sectors of the Brazilian military will continue to press for some form of arms contract with Tehran, even if only through indirect sales. [REDACTED]

² In addition to plans to upgrade military equipment—now substantially on hold due to funding constraints—Brazilian military professionalization is to include expansion in the size of the armed forces beginning in 1986, improvements in individual and unit training, and greater attention to technical disciplines such as electronic warfare. [REDACTED]

We judge that the Brazilians are not likely to place reexport controls on indigenous or derived weapons technology because they see the absence of such controls as an advantage in international markets. We judge that Brasilia will try to avoid employing US weapons components that carry reexport restrictions, but it probably will accept limited controls in order to obtain information on US systems in which it has special interest. Over the midterm to long term, in our view, there is a significant risk that US-derived technology may be leaked via Brazil to countries hostile to the United States. [REDACTED]

Moreover, the low level of awareness in Brazil of the Soviet technical intelligence collection effort, in our opinion, probably will continue to impede the development of guidelines on sharing technology with the Soviets. Loss of some information in metallurgy and perhaps in optical communications is a possibility. As Brazilian weapons technology improves, it is likely to attract greater interest from Moscow, particularly if Soviet access to similar technology in developed Western countries becomes more difficult. [REDACTED]

Alternative Scenario

While we are confident of Brazil's commitment to an aggressive arms production and marketing program in the future, we are less certain that it will encounter a hospitable commercial environment. We believe external factors could cause a serious decrease in arms exports and negatively affect Brazil's defense industries. With 90 percent of production destined for foreign buyers, these industries are highly vulnerable to market disruptions. World demand could contract even further than analysts expect due to unforeseen circumstances such as an end to or gradual winding down of the Iran-Iraq war. The loss of a few key markets in the Middle East alone could slash sales drastically. Brazil is particularly vulnerable because just two countries—Iraq and Libya—purchase more than half of all Brazilian arms exports, and both have regimes subject to political instability, eroding finances, and erratic behavior by their leaders. If sales should plummet, moreover, we consider it unlikely that the Brazilian armed forces could absorb large amounts of unsold equipment, given the country's economic woes. [REDACTED]

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Implications for the United States

Brazil's arms exports and the prospect that they will expand have mixed implications for the United States.

On the positive side:

- The hard currency they earn helps Brazil meet its international debt obligations.
- Brazilian weapons producers could arm states that the United States supports but, for political reasons, is unwilling to provide with arms.
- Some Brazilian weapons—simple, light armored vehicles, for example—are attractive alternatives for LDCs to equivalent Soviet equipment because of their simplicity, reliability, and low cost.

The US-Brazilian accord on military-industrial cooperation could enhance the ability of the United States to influence Brazil's arms sales practices, and at the very least may encourage Brasilia to formulate coherent technology transfer policies, but we believe it also carries risks. More effective weapons incorporating

some aspects of US technology could be transferred to hostile states such as Libya by means of derived or imitative Brazilian technology. The growth of cooperative projects, such as the joint rocket program with Iraq, moreover, carries the potential for the introduction of more lethal weapons incorporating advanced technology into regions of conflict.

Even when technology is not at issue, Brazil's arms sales to Libya and other unfriendly countries conflict with US goals. Tripoli's subsequent transfer of some Brazilian weapons to insurgent associates—the Polisario Front and the Chadian rebels, for example—further undermines US interests in these areas.

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In addition, we believe links to Arab oil suppliers and arms markets reinforce Brazil's inclination to pursue a foreign policy independent of the United States. We expect Brasilia, in part because of these ties, to continue to take a Third World stand and vote against the United States in international organizations. In particular, we believe the Brazilians at times will take anti-Israeli positions—or at least abstain from votes concerning Israel—in the United Nations in order to protect their trade relationship with Arab clients.

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Figure 4
Evolution of Brazil's Arms Industry
Production Chronology of Major Systems, 1965-90

	1965	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Vehicles	Trucks ^a									Cacavel APC ^a						Jararaca scout car ^a					Osoio tank ^b					
										Urutu APC ^a											Tameyo tank ^b					
Rockets											Tactical multiple rocket launch system ^a				X-20/X-40 SS rocket ^c					Medium-range Astros multiple rocket launch system ^b					Long-range Astros multiple rocket launch system ^b	
Aircraft										Xavante fighter ^a					Bandeirante (patrol version) ^a				Tucano trainer ^a		Brasil (military version) ^b		AMX fighter ^b			

^a Entered series production.^b Projected entry into series production.^c Completed test and evaluation; production status uncertain.

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